

§ 277.8 Procedures for apportionment of costs.

This paragraph provides the procedures for apportionment of costs of bridge alterations, as established by the U.S. Coast Guard (reference § 277.3(c)) and adapted for use in Corps planning and construction programs. A sample apportionment of the cost of a hypothetical bridge alteration is provided in Appendix B.

(a) *Calculate the total estimated cost of bridge alteration.* The total estimated cost, to be apportioned by these procedures, includes the cost of all necessary appurtenances required to complete the alteration for use by both highway and railway traffic, including engineering, design and inspection.

(b) *Determine the salvage value of bridge to be altered.* The salvage value represents the worth of the materials in the old bridge which may be used for scrap or for other purposes. The value will vary depending on the intended use of the materials.

(c) *Determine direct and special benefits—(1) Removing old bridge.* The bridge owner shall pay a share of the removal cost computed as that part of the removal cost that the used service life bears to the total estimated service life. The share of the bridge owner, thus computed, represents an obligation incurred by the owner now by reason of the needs of navigation which otherwise would not have to be met until the bridge had reached the end of its useful life. Accordingly, the present worth of the amount is computed deferred over the unexpired life. The discount rate to be used in the present worth computation is that established by the Water Resources Council, current at the time of the study.

(2) *Fixed charges.* A fixed charge such as engineering, design, and inspection costs, realtor and counsel fees, and the bridge owner's administrative expenses is an undistributed cost, shared in the ratio that each party shares in the cost of construction less fixed charges. In computing the bridge owner's share of the fixed charges, all other financial liabilities assigned to the bridge owner shall be included in the computation.

(3) *Contribution.* If a third party should be involved in a bridge alteration project, such as a party which

might benefit from some reasonable modification beyond the needs of navigation and the needs and desires of the bridge owner, that party would be responsible for the incremental costs of such further modification, and such costs would not enter into the apportionment between the bridge owner and the Federal Government.

(4) *Betterments.* Items desired by the bridge owner, but which have no counterpart in the old bridge or are of higher quality than similar items in the old bridge, will be included under this heading. Items considered to fall within this category are listed below. It is intended this list serve as a guide to indicate the types of items that may be considered betterments. The cost of such items will be borne by the bridge owner.

- (i) Access roads.
- (ii) Concrete or stone finish of embankment slopes instead of seeding.
- (iii) Water proofing and skid-resistant epoxy finish of masonry surfaces.
- (iv) Steel or concrete spans instead of timber trestle.
- (v) Ballasted deck instead of open deck.
- (vi) Trainman's walkways and side-walks.
- (vii) Elevators costing more than stairways.
- (viii) Materials of greater thickness or heavier weight than supported by design requirements.
- (ix) Exotic materials for machinery and operator's house, including tinted and insulated windows.
- (x) Heaters and insulation in the machinery house.
- (xi) Operator's house furnishings, air-conditioners, water coolers, and medicine cabinets.
- (xii) Hydraulic jacks for counterweight support.
- (xiii) Fourth coat of paint, and exotic paint systems.
- (xiv) Brass pipe and high alloy steel conduits.
- (xv) Floodlights and metallic vapor arc lights.
- (xvi) Spare parts.
- (xvii) Lubricants and lubrication equipment, and tools in excess of minimum requirements.

(d) *Determine expectable savings in repair or maintenance costs.* (1) The provisions of any features that would reduce annual maintenance costs of the altered bridge, such as a wider navigation span eliminating the requirement for protection works, reducing the overall length of the bridge by fill in lieu of a trestle, or replacing two bridges with one bridge, will be included under this heading. The bridge owner should bear the increased annual maintenance cost that will accrue as a result of providing any increased loading and width desired by the bridge owner or attributable to the requirements of railway or highway traffic. Since 33 U.S.C. 516 does not mention bridge operating costs, any increase or decrease in such costs shall not be included in the cost of alteration to be apportioned. The bridge owner's obligation is computed by capitalizing the estimated annual savings at the same rate of interest used in § 277.8(e)(1).

(2) Expectable savings in repair costs is that amount which the bridge owner will not have to pay to restore his bridge, which may be in a damaged condition or may be dilapidated, since the bridge is being altered or removed as a part of the contemplated navigation improvement.

(e) *Estimate costs attributable to requirements of railway and highway traffic.* Items desired by the bridge owner to meet the requirements of railway and highway traffic, but which have no counterpart in the old bridge, will be included under this heading. Items considered to fall within this category are listed below. This list does not contain all such items, but it is intended to serve as a guide in determining which items might fall within this category.

(1) Increased navigational clearances for the benefit of land traffic.

(2) Wider roadbed.

(3) Additional traffic lanes or track.

(4) Medians and wider traffic lanes.

(5) Increased train clearances and spacing of tracks.

(6) Larger cross and bridge ties.

(7) New and heavier rail and expansion joint devices.

(8) Additional signaling and communications systems.

(9) Additional right-of-way.

(f) *Estimate expenditure for increased carrying capacity.* The bridge owner is required to pay the difference in cost between a bridge meeting the navigation clearance requirements with the same live loading capacity as the old bridge and new or altered bridge having any increased live loading capacity desired. The cost of increased live loading capacity will be based on the estimated cost of the new or altered bridge with unit prices applied to the quantity of materials estimated for a hypothetical bridge with the same live loading as the old bridge, but with the increased clearances required by the navigation improvement. The live loading of the new or altered bridge should be compared with the live loading of the old bridge, based on normal working stresses without overstress, overload, or reduction of safety factor.

(g) *Determine value of expired service life of old bridge.* (1) Section 6 of the Act provides, among other things, that the bridge owner shall bear such proportion of the actual capital cost of the old bridge or such part of the old bridge as may be altered or rebuilt, as the used service life of the whole or a part bears to the total estimated service life of the whole or such part. Guide service life figures have been obtained from retirement curves based on mortality statistics, which represent an attempt to consider economic causes of retirement in addition to physical causes.

(2) For railroad bridges service life, figures of 100 years for substructure, 70 years for superstructure, 37 years for treated timber, 35 years for automatic signals, 20 years for main rail, 30 years for siding rail, and 20 years for cross-ties and bridge ties are considered to be reasonable and will be used in computing the bridge owner's liability. The service life of the operator's house and machinery house, including machinery, is considered to expire with the removal of the superstructure. For timber structures which have been in existence for more than 50 percent of their estimated service life, the expired service life is held usually at 50 percent providing the structure has been adequately maintained and is in a good state of repair.

(3) The service life of highway bridges, except for certain long span

bridges, is usually limited by obsolescence as well as structural deficiency and deterioration. Obsolescence may be due to insufficient capacity for heavier loads and greater volume of traffic than the bridge was originally designed for, safety requirements, and location. Superstructures and pile bents are considered to have a service life of 50 years. Masonry substructure which could be reused in the renovation of a bridge is considered to have a service life of 100 years.

(4) The foregoing service life figures are not to be used arbitrarily, but as a basis for a fair judgment of the service life considering all other factors that pertain in any particular case.

APPENDIX A TO PART 277—SEC. 6, PUB. L. 647, AS AMENDED (33 U.S.C. 516)

At the time the Secretary* shall authorize the bridge owner to proceed with the project, as provided in Section 515 of this title, and after an opportunity to the bridge owner to be heard thereon, the Secretary shall determine and issue an order specifying the proportionate shares of the total cost of the project to be borne by the United States and by the bridge owner. Such apportionment shall be made on the following basis: The bridge owner shall bear such part of the cost as is attributable to the direct and special benefits which will accrue to the bridge owner as a result of the alteration, including the expectable savings in repair or maintenance costs; and that part of the cost attributable to the requirements of traffic by railroad or highway, or both, including any expenditure for increased carrying capacity of the bridge, and including such proportion of the actual capital cost of the old bridge or of such part of the old bridge as may be altered or changed or rebuilt, as the used service life of the whole or a part, as the case may be, bears to the total estimated service life of the whole or such part. Provided, that in the event the alteration or relocation of any bridge may be desirable for the reason that the bridge unreasonably obstructs navigation, but also for some other reason, the Secretary may require equitable contribution from any interested person, firm, association, corporation, municipality, county, or State desiring such alteration or relocation for such other reason, as a condition precedent to the making of an order for such alteration or relocation. The United States shall bear the balance of the costs, including that part attributable to the necessities of navigation; and provided further, that where

*Secretary of Transportation.

the bridge owner proceeds with the alteration on a successive partial bid basis the Secretary is authorized to issue an order of apportionment of cost for the entire alteration based on the accepted bid for the first part of the alteration and an estimate of cost for the remainder of the work. The Secretary is authorized to revise the order of apportionment of cost, to the extent he deems reasonable and proper to meet any changed conditions.

(June 21, 1940, ch. 409, Section 6, 54 Stat. 499; July 16, 1952, ch. 889, Section 2, 66 Stat. 733; Aug. 14, 1958, Public Law 85-640, Section 1(c), 72 Stat. 595.)

APPENDIX B TO PART 277—HYPOTHETICAL EXAMPLE OF COST APPORTIONMENT

Following is the interpretation of the principles as applied to the alteration of a hypothetical highway—railroad bridge across Blank River between City A and City B.

	Ref- erence table
1. Total estimated cost of alteration project.	\$10,917,300 A
The existing double deck swing span will be replaced with a new double deck lift span affording a horizontal navigation opening of 250 feet clear width between piers normal to the navigation channel and a vertical clearance of 125 feet above mean high water in the raised position.	
2. Salvage	\$77,300
This value is deducted from the original cost to determine the actual capital cost (Table VII). It is also deducted from the Total Estimated Cost of Alteration Project to determine the cost to be apportioned.	
3. Direct and special benefits:	
a. Removing old bridge (owner's share).	\$165,489 I
b. Fixed charges (owner's share).	284,460 II
A fixed charge such as engineering, design and inspection costs, realtor's and counsel's fees, and bridge owner's administrative expenses is an undistributed cost shared in the ratio that each party shares the cost of construction less fixed charges. In computing the bridge owner's share of the fixed charges, all other financial liabilities assigned to the bridge owner shall be included in the computation. (Table II).	
c. Contribution by third party ..	\$432,000

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